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(54) **Compositions comprising caprylyl glycol and preservatives**

(57) This invention relates to compositions containing caprylyl glycol or an analog thereof, and a preservative agent. It further relates to the use of such compositions in topical formulations, in particular in cosmetic

formulations. It further relates to the use of caprylyl glycol or an analog thereof to increase the activity of preservative agents.

**EP 1 206 933 A1**

**Description**

[0001] This invention relates to compositions containing caprylyl glycol or an analog thereof, and a preservative agent. It further relates to the use of such compositions in topical formulations, in particular in cosmetic formulations.

**Background of the invention**

[0002] Preservatives are agents that are frequently used in cosmetic products, including in personal care products. Preservatives are aimed at protecting products from decay or spoilage, mainly caused by microorganisms. They typically possess anti-microbial activity.

[0003] A disadvantage of using such agents is that they may cause adverse effects such as allergic responses and irritation. This is especially the case when applying cosmetic formulations containing preservatives to atopic skins. This is the reason why so far, cosmetic formulations that can be applied to atopic skins do not contain preservatives and therefore are prone to become affected and degraded by microorganisms and moreover to become a source of microbiological contamination.

[0004] One would therefore be inclined to reduce the amount of preservative in cosmetic formulations, in particular in those formulations that are or can be used on atopic skins. By doing so, one could expect that the aforementioned side effects are reduced or even are completely absent. However this would result in the concentration of the preservative being too low to be effective so that there is a risk of the formulation becoming affected by microorganisms.

[0005] Therefore it would be desirable to make available cosmetic formulations that, on the one hand, have a sufficiently low degree of microbiological contamination and on the other are not susceptible to microbiological contamination and deterioration. It would additionally be desirable to provide such formulations that are devoid of the side effects that are typically caused by preservative agents, in particular in the instance of application to atopic skins.

[0006] The compositions and formulations of the present invention meet these goals in that the effect of the preservative agent(s) is potentiated so that less of the preservative needs to be used. Furthermore the potentiating agent has a positive effect on the broadness of the anti-microbial spectrum of the preservative.

[0007] Quite unexpectedly it has been found that the use of caprylyl glycol or certain analogs thereof enhance the efficacy of a preservative agent.

[0008] Caprylyl glycol in itself is devoid of undesired adversary effects to the skin and in particular to an atopic skin and is currently used as humectant or emollient.

**Summary of the invention**

[0009] Thus in one aspect the present invention is concerned with a composition containing caprylyl glycol or an analog thereof, and a preservative agent.

[0010] A preferred preservative agent is iodopropynyl butylcarbamate. A particularly preferred composition comprises caprylyl glycol (also referred to as 1,2-octanediol) and iodopropynyl butylcarbamate.

[0011] In another aspect the invention provides a topical formulation comprising a composition as defined herein and further ingredients. The topical formulation can be for dermatological use, but in particular is for cosmetic use.

[0012] In a further aspect, the invention relates to the use of caprylyl glycol or an analog thereof, for potentiating or boosting the effect of preservative agents. Said use preferably is in topical formulations, more preferably in dermatological or in cosmetic formulations.

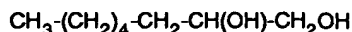
[0013] The invention further relates to the use of a composition as defined herein as a preservative system. Said use preferably is in topical formulations, more preferably in dermatological or in cosmetic formulations.

[0014] In a particular aspect the invention concerns the use as a preservative system of a composition comprising caprylyl glycol or an analog thereof and iodopropynyl butylcarbamate.

[0015] In another aspect there is provided a composition as defined herein wherein the preservative, or in particular iodopropynyl butylcarbamate, is present in an amount that is less than effective. Similarly, there is provided a topical formulation as defined herein wherein the preservative, or in particular iodopropynyl butylcarbamate, is present in an amount that is less than effective.

**Detailed Description of the invention**

[0016] As used herein, caprylyl glycol refers to 1,2-octanediol and can be structurally represented by the formula:



Caprylyl glycol analogs comprise C<sub>5-20</sub> alkanediols, in particular C<sub>6-16</sub> alkanediols, more in particular C<sub>6-12</sub> alkanediols. Preferred are the alkanediols mentioned herein wherein the hydroxy groups are vicinally substituted. Examples of such alkanediols are 2,3-octanediol, 1,2-nonanediol, 1,2-decanediol, 1,2-dodecanediol, 1,2-heptanediol, 1,2-hexanediol, 3,4-octanediol and the like. Of particular interest are those vicinal alkanediols wherein one hydroxy is substituted at an end carbon and the other on the carbon atom next thereto.

[0017] A particular group of caprylyl glycol analogs are those which have a 1,2-octanediol skeleton which is further substituted with 1, 2 or 3 C<sub>1-4</sub> alkyl groups (or 1,2-octanediol substituted with 1, 2 or 3 C<sub>1-4</sub> alkyl groups) such as, for example, 3-methyl-1,2-octanediol, 4-methyl-1,2-octanediol, 3,4-dimethyl octanediol, 3-ethyl-1,2-octanediol, 4-ethyl-1,2-octanediol and the like.

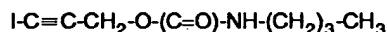
[0018] The caprylyl glycol analogs that can be used in the compositions or formulations of the invention preferably are devoid of any adverse effects on the skin, in particular on atypical skins, such adverse effects particularly comprising allergic reactions and irritation.

[0019] The term 'caprylyl glycol or an analog thereof' is also meant to comprise mixtures of caprylyl glycol and one or more of its analogs, or mixtures of two or more caprylyl glycol analogs, in particular those analogs mentioned herein.

The term 'caprylyl glycol' when used in isolation is also meant to comprise caprylyl analogs, in particular the analogs mentioned herein. The term 'caprylyl glycol' when used in isolation is also meant to comprise mixtures of caprylyl glycol and one or more caprylyl glycol analogs, or mixtures of two or more caprylyl glycol analogs, in particular those analogs mentioned herein.

[0020] Preservatives that can be used in the compositions or topical formulations of the invention comprise phenox-yethanol, alkylparabens and their salts, in particular their alkalimetal salts such as sodium salts (e.g. C<sub>1-6</sub> alkyl parabens such as methyl, ethyl, propyl, butyl paraben and the like parabens), chlorhexidine, and the like, and mixtures of preservatives such as, for example, Nipaguard™ (e.g. Nipaguard MPA™), Phenonipe™, and the like. Other suitable preservatives are formaldehyde or formaldehyde releaser, benzyl alcohol, chloroxymenol, methylchloroisothiazolinone, methylisothiazolinone, sodium benzoate, chlorhexidine, digluconate, methylidibromo glutaronitrile, 5-bromo-5-nitro-1,3-dioxane, benzoic acid, dehydroacetic acid, diazolidinyl urea, dichlorobenzyl alcohol, glucose oxidase, hexamidine diisethionate, imidazolidinyl urea, lactoperoxidase, PEG-4 laurate, phenethyl alcohol, polyaminopropyl biguanide, potassium sorbate, propylene glycol, pyridoxine HCl, quaternium-15, sorbic acid, triclosan and the like.

[0021] Preferred is the preservative iodopropynyl butylcarbamate, also referred to as butyl-3-iodo-2-propynylcarbamate or IPBC, that can be structurally represented by the following chemical structure:



[0022] As used herein the term 'preservative' is meant to also comprise mixtures of iodopropynyl butylcarbamate with one or more other preservatives, in particular the preservatives mentioned herein, or the term 'preservative' is meant to also comprise mixtures of one or more preservatives, in particular mixtures of the preservatives mentioned herein.

[0023] The weight by weight ratio of caprylyl glycol or its analog to the preservative agent typically is in the range of 0.1 to 500, in particular 1 to 500, or 1 to 250, or 2 to 500. Preferably said ratio is in the range of 5 to 100, or 10 to 100, or 5 to 75. More preferably said ratio is in the range of 20 to 100, or 20 to 75. Still more preferably said ratio is in the range of 25 to 75 or 50 to 60. In particular said ratio is 55 or about 55.

[0024] The amount of caprylyl glycol or its analog in the formulations according to this invention may vary, but will be selected such that the combination thereof with the preservative has an effective preservative activity. It has been found that good results are obtained when using concentrations in the range from about 0.1 to 30% weight/weight (w/w) of the composition. In particular, the concentration of caprylyl glycol or its analog should be in the range from 0.1 to 20 %, more in particular from 0.2 to 10 %, preferably from 0.5 to 5 % or 0.5 to 2 %, all percentages being w/w. A particularly preferred concentration is 1 % w/w.

[0025] The term effective preservative activity means that its activity is such that the composition or formulation is protected for a sustained period of time, in particular during the so-called 'shelf life' of the product. The 'shelf-life' of a product is determined according to methods generally known in the art.

[0026] The amount of the preservative agent, and in particular of IPBC, in the formulations according to this invention may vary but it has been found that good results are obtained when using concentrations in the range from about 0.001 to 1% w/w of the composition, in particular from 0.001 to 0.5 %, or from 0.001 to 0.25 %, in particular from 0.001 to 0.100 %, or from 0.001 to 0.050 %, all percentages being w/w. A particular preferred concentration is in the range of 0.010 to 0.025 % w/w. Or expressed differently, the concentration of the preservative agent and in particular of IPBC in the formulation is in the range 1 to 250 ppm, or 1 to 200 ppm, more preferably in the range of 10 to 200 ppm, 'ppm' also referring to w/w.

[0027] Of special interest is a formulation containing about 1 % w/w of caprylyl glycol and about 0.018 % w/w of

IPBC to obtain a broad anti-microbial spectrum that shows better results than IPBC alone.

[0028] The compositions of the present invention contain caprylyl alcohol or a derivative and a preservative, and optionally other components. Other components may be solvents or any of the other components mentioned hereinafter as components that can be added to the topical formulations according to the invention.

[0029] The compositions of the present invention are generally prepared by mixing the caprylyl glycol or the analog thereof, and the preservative. Solvent may be added after mixing, or the components are mixed while being present in a solvent. Other components may be added during the mixing or afterwards. The said glycol and preservative may also be added to a premix of other components.

[0030] This invention further relates to topical formulations containing a composition as defined herein. Topical compositions comprise as well dermatological formulations (or topical pharmaceutical formulations), as cosmetical formulations. Said topical formulations may further contain other ingredients or additives used in dermatological or in cosmetical formulations, including other active ingredients

[0031] The formulations according to the present invention are formulated into forms that are useful in personal care products, especially in emulsions. The formulations are in particular for application to atopic skins.

[0032] The topical formulations according to the present invention may additionally contain further ingredients or additives such as solvents, surfactants, emulsifiers, consistency factors, conditioners, emollients, skin caring ingredients, moisturizers, thickeners, lubricants, fillers, anti-oxidants, preservatives, active ingredients, in particular dermatologically active ingredients, fragrances and the like. Active ingredients as mentioned herein comprise, for example, anti-inflammatories, antibacterials, anti-fungals and the like agents. Active ingredients suited for topical applications are particularly preferred.

[0033] Suitable surfactants comprise:

alkyl sulfates e.g. sodium lauryl sulfate, ammonium lauryl sulfate, sodium cetearyl sulfate,  
alkyl sulfoacetates e.g. sodium lauryl sulfoacetate,  
alkyl ether sulfates e.g. sodium laureth sulfate, sodium trideceth sulfate, sodium oleth sulfate, ammonium laureth sulfate

alkyl ether sulfosuccinates e.g. disodium laureth sulfosuccinate

alkyl glycosides e.g. decyl glucoside, lauryl glucoside,

alkyl isethionates

amphoterics e.g. cocamidopropyl betaine, sodium cocoamphoacetate, sodium lauroamphoacetate, disodium lauroamphodiacetate, disodium cocoamphodiacetate, sodium lauroamphopropionate, disodium lauroamphodipropionate, potassium or ammonium salts of the aforementioned amphoterics, capryl/capramidopropyl betaine, undecylenamidopropyl betaine, lauramidopropyl betaine and fatty alcohol polyglycol ethers.

[0034] Suitable emulsifiers are e.g. anionics as salts of fatty acids e.g. sodium stearate or sodium palmitate, organic soaps e.g. mono-, di- or triethanolamineoleate, sulfated or sulfonated compounds e.g. sodium lauryl sulfate or sodium cetyl sulfonate, saponines, lampyones; cationics as quaternary ammonium salts; nonionics as fatty alcohols, fatty acid ester with saturated or unsaturated fatty acids, polyoxyethylenesters or polyoxyethylenethers of fatty acids, polymers from ethylene oxide and propylene oxide or propylene glycol, amphoterics as phosphatides, proteins as gelatine, casein alkylamidobetaines, alkyl betaines and amphoglycinates, alkyl phosphates, alkylpolyoxyethylene phosphates or the corresponding acids, silicone derivatives, e.g. alkyl dimethicone copolyol.

[0035] Suitable consistency factors are e.g. fatty alcohols or their mixtures with fatty acid esters, e.g. acetylated lanolin alcohol, aluminum stearates, carbomer, cetyl alcohol, glyceryl oleate, glyceryl stearate, glyceryl stearate (and) PEG 100 stearate, magnesium stearate, magnesium sulfate, oleic acid, stearic acid, stearyl alcohol, myristyl myristate, isopropyl palmitate, beeswax and synthetic equivalents thereof, carbomers, etc. Suitable conditioners are e.g. alkylamid ammonium lactate, cetrimonium chloride and distearoylethyl hydroxyethylmonium methosulfate and cetearyl alcohol, cetyl dimethicone, cetyl ricinoleate, dimethicone, laureth-23, laureth-4, polydecene, retinyl palmitate, quaternised protein hydrolysates, quaternised cellulose and starch derivatives, quaternised copolymers of acrylic or methacrylic acid or salts, quaternised silicone derivatives.

[0036] Suitable emollients are e.g. cetearyl isononanoate, cetearyl octanoate, decyl oleate, isooctyl stearate, coco caprylate/caprinate, ethylhexyl hydroxystearate, ethylhexyl isononanoate, isopropyl isostearate, isopropyl myristate, oleyl oleate, hexyl laurate, paraffinum liquidum, PEG-75 lanolin, PEG-7 glyceryl cocoate, petrolatum, ozokerite, cyclomethicone, dimethicone, dimethicone copolyol, dicaprylyl ether, butyrospermum parkii, buxus chinensis, canola, carnauba cera, copernicia cerifera, oenothera biennis, elaeis guineensis, prunus dulcis, squalane, zea mays, glycine soja, helianthus annuus, lanolin, hydrogenated castor oil, hydrogenated coconut oil, hydrogenated polyisobutene, sucrose cocoate, stearoxy dimethicone, lanolin alcohol, isohexadecane.

[0037] Suitable skin caring ingredients are e.g. plant extracts, bisabolol, antiinflammatory agents, urea, allantoin,

panthenol and panthenol derivatives, phytantriol, vitamins A, E, C, D, ceramides of animal or plant origin, lecithins, etc.

[0038] Suitable moisturizers are e.g. butylene glycol, cetyl alcohol, dimethicone, dimyristyl tartrate, glucose, glycereth-26, glycerin, glyceryl stearate, hydrolyzed milk protein, lactic acid, lactose and other sugars, laureth-8, lecithin, octoxyglycerin, PEG-12, PEG-135, PEG-150, PEG-20, PEG-8, pentylene glycol, hexylene glycol, phytantriol, polyquaternium-39, PPG-20 methyl glucose ether, propylene glycol, sodium hyaluronate, sodium lactate, sodium PCA, sorbitol, succinoglycan, synthetic beeswax, tri-C14-15 alkyl citrate, starch.

[0039] Suitable thickeners are e.g. acrylates/stearate-20 methacrylate copolymer, carbomer, carboxymethyl starch, cera alba, dimethicone/vinyl dimethicone crosspolymer, propylene glycol alginate, hydroxyethylcellulose, hydroxypropyl methylcellulose, silica, silica dimethyl silylate, xanthan gum, hydrogenated butylene/ethylene/styrene copolymer.

[0040] Suitable lubricants are e.g. adipic acid, fumaric acid and its salts, benzoic acid and its salts, glycerine triacetate, sodium or magnesium lauryl sulfate, magnesium stearate, solid polyethyleneglycol, polyvinylpyrrolidone, boric acid, monolaurate or - palmitate, myristyl alcohol, cetyl alcohol, cetylstearyl alcohol, talcum, calcium or magnesium salts of higher fatty acids, mono-, di- or triglycerides of higher fatty acids, polytetrafluorethylene.

[0041] Suitable anti-oxidants are e.g. sulfites, e.g. sodium sulfite, tocopherol or derivatives thereof, ascorbic acid or derivatives thereof, citric acid, propyl gallate, chitosan glycolate, cysteine, N-acetyl cysteine plus zinc sulfate, thiosulfates, e.g. sodium thiosulfate, polyphenols and the like.

[0042] The compositions may further contain active ingredients, e.g. anti-microbials such as complexes of PVP and hydrogen peroxide, anti-inflammatories, plant extracts, bisabolol, panthenol, tocopherol, actives for anti-stinging, anti-irritants, anti-dandruffs, or anti-aging agents such as retinol, melibiose and the like. Other suitable actives are e.g. *Medicago officinalis*, *Actinidia chinensis*, allantoin, *Aloe barbadensis*, *Anona cherimolia*, *Anthemis nobilis*, *Arachis hypogaea*, *Arnica montana*, *Avena sativa*, beta-carotene, bisabolol, *Borago officinalis*, butylene glycol, *Calendula officinalis*, *Camellia sinensis*, camphor, *Candida bombicola*, capryloyl glycine, *Carica papaya*, *Centaurea cyanus*, cetylpyridinium chloride, *Chamomilla recutita*, *Chenopodium quinoa*, *Chinchona succirubra*, *Chondrus crispus*, *Citrus aurantium dulcis*, *Citrus grandis*, *Citrus limonum*, *Cocos nucifera*, *Coffea arabica*, *Crataegus monogyna*, *Cucumis melo*, dichlorophenyl imidazolidioxolan, *Enteromorpha compressa*, *Equisetum arvense*, ethoxydiglycol, ethyl panthenol, farnesol, ferulic acid, *Fragaria chiloensis*, *Gentiana lutea*, *Ginkgo biloba*, glycerin, glyceryl laurate, *Glycyrrhiza glabra*, *Hamamelis virginiana*, heliotropine, hydrogenated palm glycerides, citrates, hydrolyzed castor oil, hydrolyzed wheat protein, *Hypericum perforatum*, *Iris florentina*, *Juniperus communis*, *Lactis proteinum*, lactose, *Lawsonia inermis*, linoleol, *Linum usitatissimum*, lysine, magnesium aspartate, *Magnifera indica*, *Malva sylvestris*, mannitol, mel, *Melaleuca alternifolia*, *Mentha piperita*, menthol, menthyl lactate, *Mimosa tenuiflora*, *Nymphaea alba*, olaflur, *Oryza sativa*, panthenol, paraffinum liquidum, PEG-20M, PEG-26 jojoba acid, PEG-26 jojoba alcohol, PEG-35 castor oil, PEG-40 hydrogenated castor oil, PEG-60 hydrogenated castor oil, PEG-8 caprylic/capric acid, *Persea gratissima*, petrolatum, potassium aspartate, potassium sorbate, propylene glycol, *Prunus amygdalus dulcis*, *Prunus armeniaca*, *Prunus persica*, retinyl palmitate, *Ricinus communis*, *Rosa canina*, *Rosmarinus officinalis*, *Rubus idaeus*, salicylic acid, *Sambucus nigra*, sarcosine, *Serenoa serulata*, *Simmondsia chinensis*, sodium carboxymethyl betaglucon, sodium cocoyl amino acids, sodium hyaluronate, sodium palmitoyl proline, stearoxytrimethylsilane, stearyl alcohol, sulfurized TEA-ricinoleate, talc, *Thymus vulgaris*, *Tilia cordata*, tocopherol, tocopheryl acetate, trideceth-9, triticum vulgare, tyrosine, undecylenoyl glycine, urea, *Vaccinium myrtillus*, valine, zinc oxide, zinc sulfate.

[0043] The combination of caprylyl glycol or an analog thereof and a preservative can be used in emulsions, both oil-in-water, and water-in-oil, in aqueous solutions, in PIT (phase inversion temperature) emulsions, in oily solutions, in foaming cosmetic formulations (foams), and in so-called multiple emulsions, e.g. in triple emulsions (such as water/oil/water emulsions).

[0044] The compositions of the invention can be formulated as creams, gels, liquids or lotions. They can be used in shampoos, hair conditioners, hair dyes, hair preparations, aftershave lotions, bath soaps and detergents, fragrance preparations, suncare products, indoor tanning products, body and hand preparations, personal cleansers, shaving preparations, tonics, dressings and other hair grooming aids, moisturizing preparations, skin care preparations and the like.

[0045] The topical formulations of the invention are prepared by adding other ingredients to a composition as defined herein, or adding to a mixture of ingredients a composition as defined herein. Alternatively, said formulations may also be made by mixing the ingredients individually or by groupwise mixing. Subsequently other specific ingredients, such as perfumes, may be added.

[0046] As used herein the term 'atopic skins' refers to the skin of persons suffering from atopy, or skins prone to atopic disease, or skins showing symptoms of atopic disease.

[0047] The formulations of the present invention therefore are useful for application with persons suffering from atopic disease or having an atopic skin. Actually, as atopic skins are very sensitive, the use of caprylyl glycol allows using less preservative molecules known for their allergic or irritating effects.

[0048] In a further aspect, this invention is concerned with synergistic effects between two agents, caprylyl glycol or an analog on the one hand, a preservative on the other (in particular between caprylyl glycol and IPBC) in terms of

anti-microbiological activity, as well as anti-microbiological spectrum, that shown a better efficacy than the two components alone. Hence in still a further aspect the present invention provides synergistic cosmetic compositions comprising caprylyl glycol or an analog and a preservative and in particular caprylyl glycol and IPBC. In these synergistic compositions the concentration of caprylyl glycol or an analog, and of IPBC, and the by weight ratio of said glycol or IPBC can be as mentioned herein.

[0049] The use of caprylyl glycol or an analog thereof in combination with a preservative, in particular of 1,2-octanediol with IPBC, in cosmetic formulations results in both a broad anti-microbial protection and a good skin tolerance. The anti-microbial protection is as well against bacteria as fungi, in particular against species such as, for example, *Pseudomonas aeruginosa*, *Escherichia coli*, *Staphylococcus aureus*, *Candida albicans*, *Aspergillus niger* and the like and especially against *Staphylococcus aureus*.

[0050] The combinations of the invention are particularly attractive for personal care products, and more specifically those personal care products aimed for application to atopic skins.

[0051] The compositions or formulations of the invention are particularly attractive since the agents therein have a good anti-microbial action on *Staphylococcus aureus*, and because atopic skins are prone to develop this kind of bacteria.

[0052] Thus in a further aspect, this invention concerns the use of the formulations as defined herein for combating microorganisms or preventing the growth thereof on human skin, in particular on atopic skin.

[0053] Additionally, the combination of the two agents mentioned herein may have pharmaceutical applications and to that purpose may be formulated in appropriate formulations for topical pharmaceutical applications. Hence in still a further aspect the invention provides topical pharmaceutical compositions comprising a composition as defined herein. The composition is present in an amount to effectively preserve the said pharmaceutical compositions.

[0054] The invention is further illustrated by the following examples.

#### Example 1:

[0055]

| Component  | % w/w  |
|--|--------|
| Aqua   | 58.546 |
| Carbomer   | 0.4000 |
| Hydroxyethylcellulose  | 0.2000 |
| Tromethamine   | 0.2500 |
| Glycerin   | 5.0000 |
| PEG 8  | 5.0000 |
| Disodium EDTA  | 0.1000 |
| Allantoin  | 0.5000 |
| Panthenol 75% / aqua 25%   | 0.5000 |
| Caprylyl glycol  | 1.0000 |
| Butylene glycol  | 2.0000 |
| Cetyl alcohol / Glyceryl stearate-20/<br>PEG-75 stearate / Cetheth-20/ Steareth-20 | 4.0000 |
| Polyglyceryl-3 diisostearate   | 0.4000 |
| Cera alba  | 0.5000 |
| Myreth-3 myristate   | 2.0000 |
| Hydrogenated polyisobutene   | 6.0000 |
| Hydrogenated lecithin  | 0.5000 |
| Borago officinalis   | 4.0000 |
| Canola   | 3.7000 |
| Bisabolol  | 0.0500 |
| Ascorbyl palmitate + lecithin tocopherol   | 0.0040 |

(continued)

| Component                                   | % w/w  |
|---|--------|
| Cyclomethicone                              | 5.0000 |
| Tocopherol acetate                          | 0.1000 |
| Laureth-7/ polyacrylamide/C13-15 isoparafin | 0.2500 |

The components of a group in the above list (groups being separated by a space in the above list) are mixed together. Subsequently the group mixtures are added to one another and mixed into the end product. The same procedure is followed for the formulations listed hereafter.

Example 2:

[0056]

|  |        |
|--|--------|
| Aqua   | 44.900 |
| Carbomer   | 0.4000 |
| Hydroxyethylcellulose  | 0.2000 |
| Tromethamine   | 0.2500 |
| Glycerin   | 3.8000 |
| PEG 8  | 5.0000 |
| Disodium EDTA  | 0.1000 |
| Allantoin  | 0.5000 |
| Panthenol 75% / aqua 25%   | 0.5000 |
| Grapefruit seed extract 20% / Glycerin 40% / aqua 40%                        | 3.0000 |
| Butylene glycol  | 2.0000 |
| Iodopropynyl butylcarbamate / PEG-4 laurate                                  | 0.0200 |
| Caprylyl glycol  | 1.0000 |
| Potassium cetyl phosphate  | 2.0000 |
| PEG 100 stearate 50% / glyceryl stearate 50%                                 | 0.5000 |
| Cetearyl alcohol   | 1.4000 |
| Myreth - 3 myristate   | 2.8000 |
| Vegetal oil & hydrogenated vegetable oil & candelilla wax                    | 1.8000 |
| Vegetable oil  | 11.500 |
| Dimethicone  | 1.4000 |
| Hydrogenated polyisobutene   | 8.4000 |
| Borago officinalis   | 4.0000 |
| Canola   | 3.7000 |
| Bisabolol  | 0.0500 |
| Tocopherol acetate   | 0.1000 |
| Laureth-7 5,5 % / polyacrylamide 40 % / C13-15 isoparafin 20 % / aqua 34,5 % | 0.5000 |

Example 3:

[0057]

|      |        |
|------|--------|
| Aqua | 44.900 |
|------|--------|

(continued)

|    |  |        |
|----|--|--------|
|    | Carbomer   | 0.4000 |
|    | Hydroxyethylcellulose  | 0.2000 |
| 5  | Tromethamine   | 0.2500 |
|    | Glycerin   | 3.8000 |
|    | PEG 8  | 05.000 |
| 10 | Disodium EDTA  | 0.1000 |
|    | Allantoin  | 0.5000 |
|    | Panthenol 75 % / aqua 25 %   | 0.5000 |
|    | Grapefruit seed extract 20 % / Glycerin 40 % / aqua 40 %                     | 3.0000 |
| 15 | Butylene glycol  | 2.0000 |
|    | Iodopropynyl butylcarbamate / PEG-4 laurate                                  | 0.0200 |
|    | Caprilyl glycol  | 1.0000 |
|    | Potassium cetyl phosphate  | 2.0000 |
| 20 | PEG 100 stearate 50% / glyceryl stearate 50%                                 | 0.5000 |
|    | Cetearyl alcohol   | 1.4000 |
|    | Myreth -3 Myristate  | 2.8000 |
|    | Vegetal oil & hydrogenated vegetable oil                                     |        |
| 25 | & candelilla wax   | 1.8000 |
|    | Vegetable oil  | 11.500 |
|    | Dimethicone  | 1.4000 |
|    | Hydrogenated polyisobutene   | 8.4000 |
| 30 | Borago officinalis   | 4.0000 |
|    | Canola   | 3.7000 |
|    | Bisabolol  | 0.0500 |
| 35 | Tocophenol acetate   | 0.1000 |
|    | Laureth-7 5,5 % / polycrylamide 40 % / C13-15 isoparaffin 20 % / Aqua 34,5 % | 0.5000 |

#### Claims

- 40 1. A composition containing caprylyl glycol or an analog thereof, and a preservative agent.
2. A composition according to claim 1 containing caprylyl glycol and iodopropynyl butylcarbamate.
- 45 3. A composition according to claims 1 or 2 wherein the ratio w/w of the caprylyl glycol and the preservative is in the range of 0.1 to 500.
4. A composition according to claims 1 or 2 wherein the ratio w/w of the caprylyl glycol and the preservative is in the range of 20 to 75.
- 50 5. A topical formulation comprising a composition as claimed in claims 1 to 4 and further ingredients.
6. The use of caprylyl glycol or an analog thereof, for potentiating the effect of preservative agents.
- 55 7. The use of a composition as claimed in claims 1 to 4 as a preservative system.
8. The use according to claim 7 in dermatological or in cosmetic formulations.



9. A composition according to claims 1 to 4 or a formulation according to claim 5 wherein the preservative is present in an amount that is less than effective.

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10. A composition according to claim 1 wherein the preservative agent is selected from phenoxyethanol, alkylparabens and their salts and chlorexidine.

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Application Number  
EP 01 20 4370

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